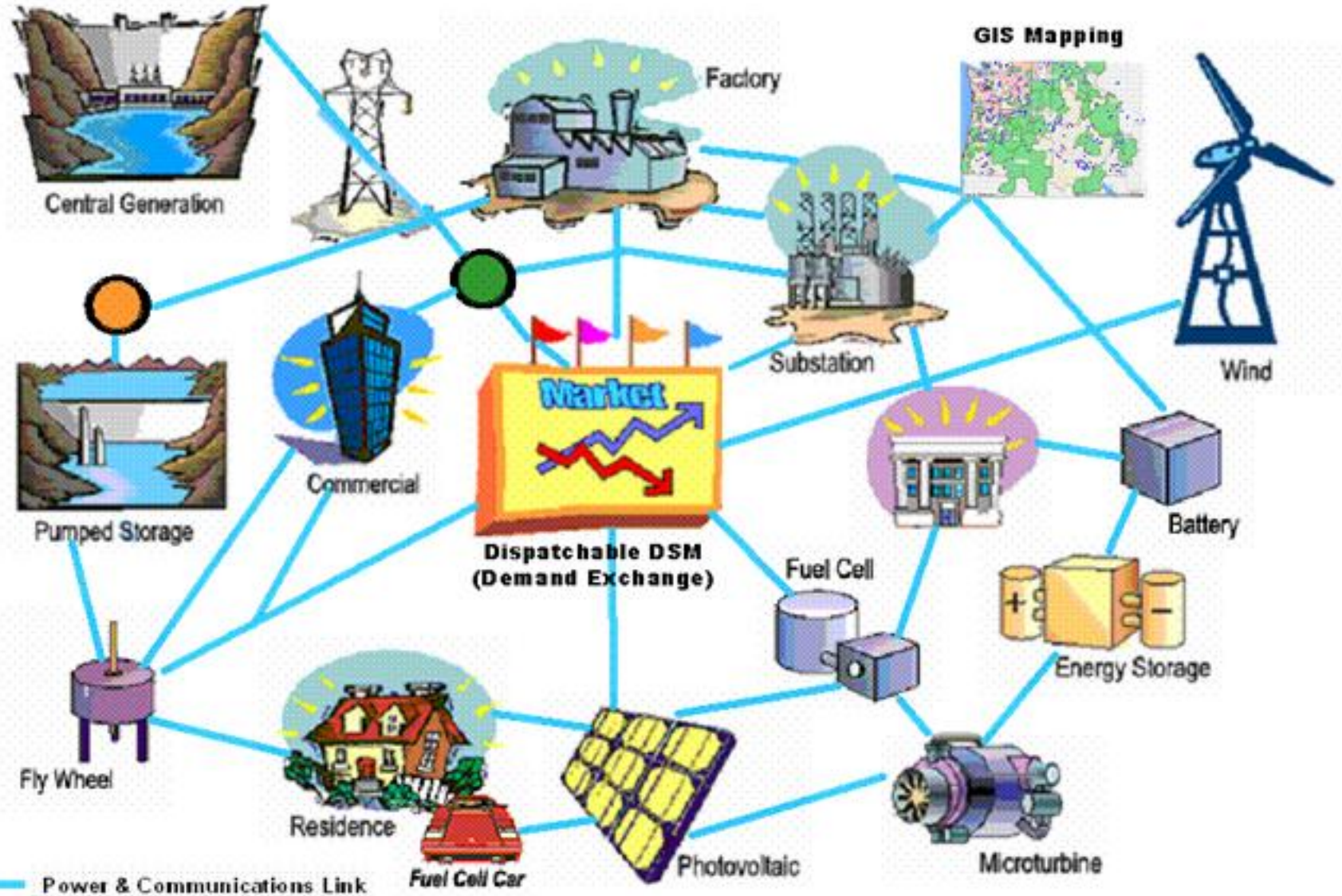
EnergyWeb


Central Generation
Factory
GIS Mapping
Substation
Wind
Commercial
Market
Pumped Storage
Dispatchable DSM
(Demand Exchange)
Battery
Fuel Cell
Energy Storage
Fly Wheel
Residence
Photovoltaic
Microturbine
Fuel Cell Car
Power & Communications Link

Energy Web definition:

The integration of the utility electrical system, telecommunications system, and the energy market

1) to optimize loads on the electrical network
2) reduce costs to consumers and utilities
3) facilitate the integration of renewable resources
4) increase electrical system reliability
5) reduce environmental impacts of load growth.

EnergyWeb History

1999 Strategic Planning group comes up with the concept

2000 Demand Exchange is first portion implemented

2001Wired Magazine article on the EnergyWeb

2002 Is BPA strategic thrust – demo plan outlined, partners

2003 Demonstration planned

EnergyWeb progress at BPA

Demand Exchange – 2000, PBL using and TBL readying demo

60kw Capstone mobile demo – in field 2001

200 Market Street CHP on the web – 2002 operational (NW Natural, Pacificorp, et al partners)

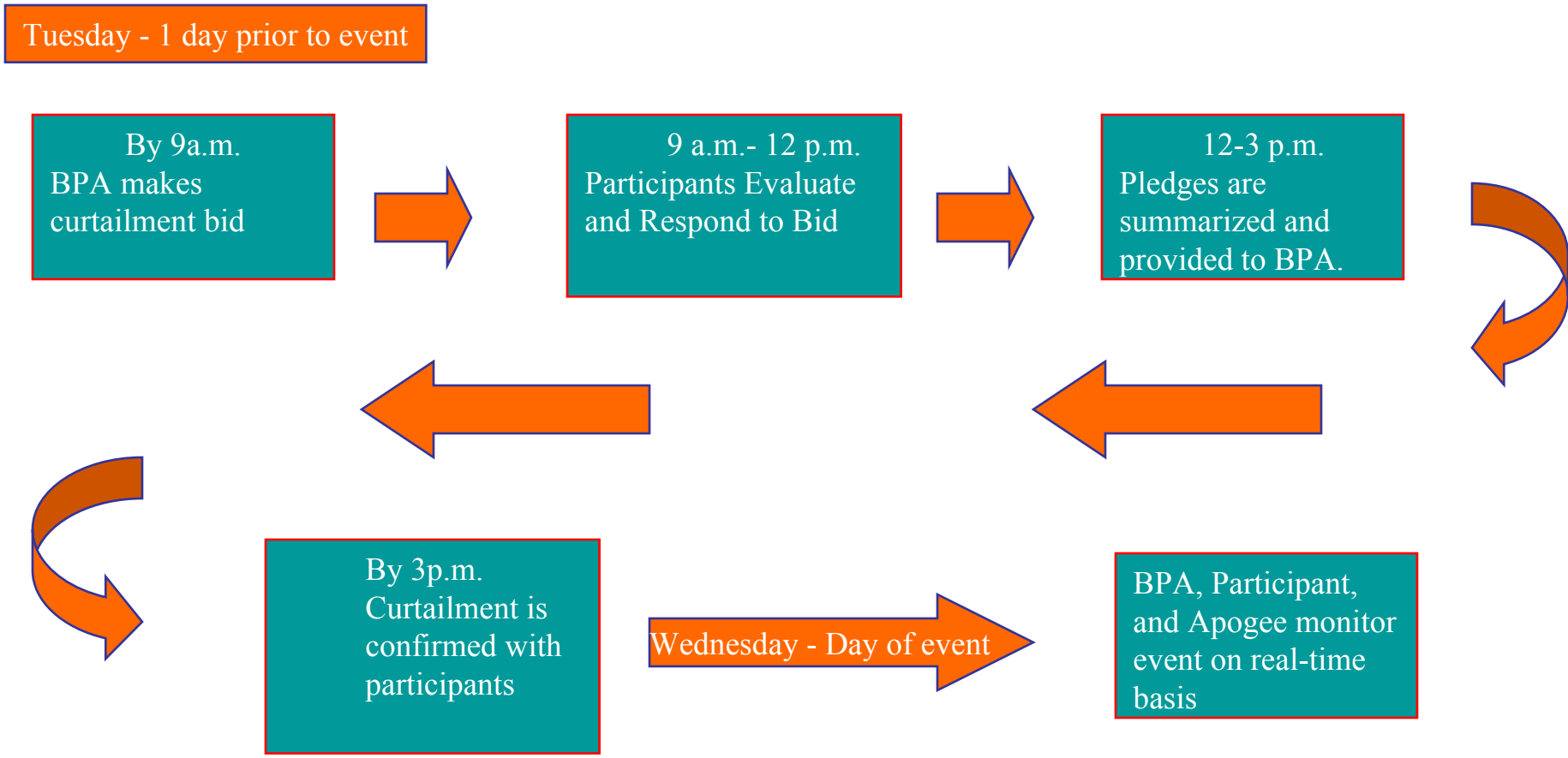
Celerity Phase 1 & utility partners – 2001/2

Celerity Demo Phase 2003

EnergyWeb integration proposal

So how does the DEMX work?

One Day Demand Exchange Mechanics

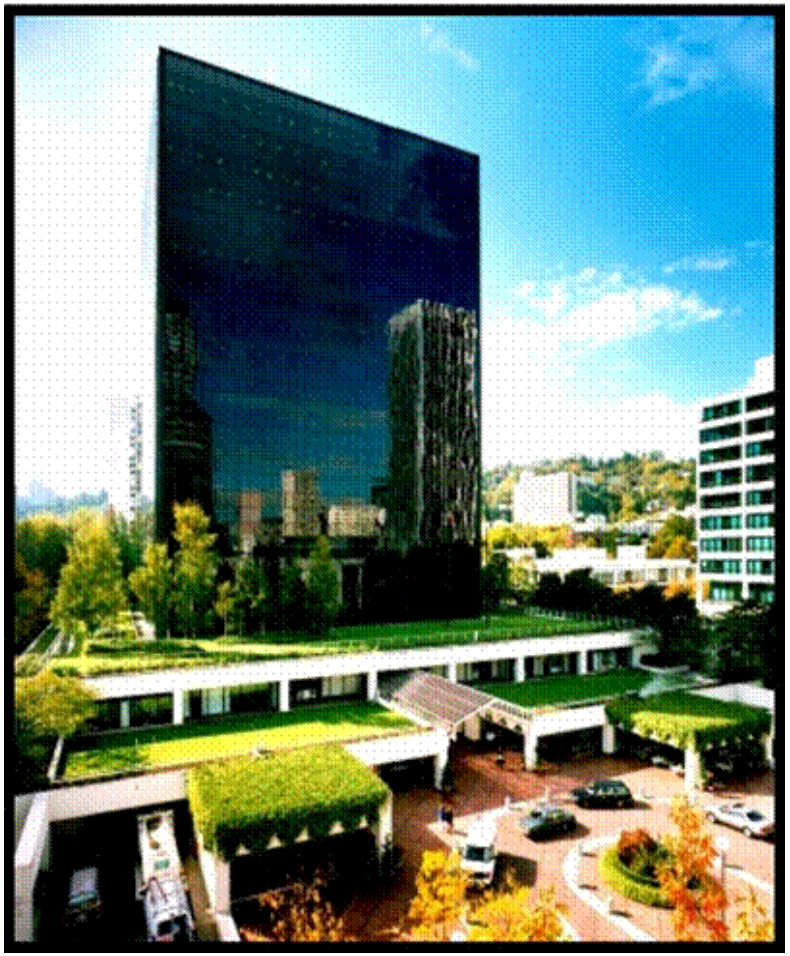


BPA's 60kw Capstone for utility demonstration

“200 Market Building Consortium”

Purpose: To install, study and publicize Combined Heat &Power in a commercial application.

- Use waste heat 24/7
- Demonstrate reliability of technology
- Drive costs down.
- Inform customers of potential problems.
- Demonstrate boiler preheat for waste heat recovery.
- Demonstrate Absorption chiller for waste heat recovery.
- Create templates for analysis and share reports, drawings and key contacts to all on the internet.



200 Market - Conclusions

- Look for base loaded 30 KW 24/7 applications.
- Look for base loaded 1.5 Therms/hour 24/7 hot water applications.
- Locate outside if possible.
- Locate close to hot water loads served first.
- Get good design advice and controls engineer on board first.
- Pools, health care/clubs computer rooms – perfect sites

EnergyWeb Phase 1

- Attracted $70,000 from DOE for pilot definition phase.
- Created pilot development working group:
  - Milton-Freewater, Tacoma Power, Snohomish PUD, Emerald PUD, Energy NW, NW Natural Gas, PNGC, Transmission Business Line, Ashland, Benton PUD, Last Mile Coop, Bonneville Environmental Foundation
- Developing pilot evaluation plan (~80% complete)
- Pilot lent significant data to support Kangley-echo lake alternatives analysis
  - Large end-use load and DG size and location data

EnergyWeb Demo Status

- Working on developing a small pilot to better understand the nature of distributed energy resources, how they interact with the transmission and distribution systems, and their value to each.

- Including small scale renewable integration topics in the project as well as demand management.

- Working to get a better sense of what would be most valuable for the region in the near term, we are working with a group of utilities and others to define what we would want to learn from a pilot. (Talk to Terry Oliver or Mike Hoffman if you want to participate)

EnergyWeb Demo – What could it be good for?

Reduce peak prices via demand reduction (small reduction in demand at peak means big move down in market prices – all users benefit)

Matching local generation and/or load reductions to local peaks (for a few hours) could reduce demand charges and defer T&D investments

Incremental investments are smaller and precisely targeted, could help mitigate boom bust cycle that could be coming

It could help deal with new load growth in the region at the local utility level with local financing and precisely sized increments of generation

DG/CHP units might allow islanding of sections of distribution feeders in outages, thus increasing security of power supply for critical loads

EnergyWeb integration proposal

Outline of what could be done with EnergyWeb technology

Presented to DOE

Still looking for more partners – utilities, technology providers

Would like to be part of any future DOE DG demonstration

Would like comments on what's missing or can make it better

Hard copies available